



Guide's Guide

Marconi Station

Location Summary

Directions: Six miles north of Salt Pond Visitor Center, off Route 6 in Wellfleet (look for brown and white signs).

Safety: Watch for bicyclists along Route 6, and where the bicycle trail crosses the Marconi area entrance road. Do not walk on the edge of, or beneath, cliff faces.

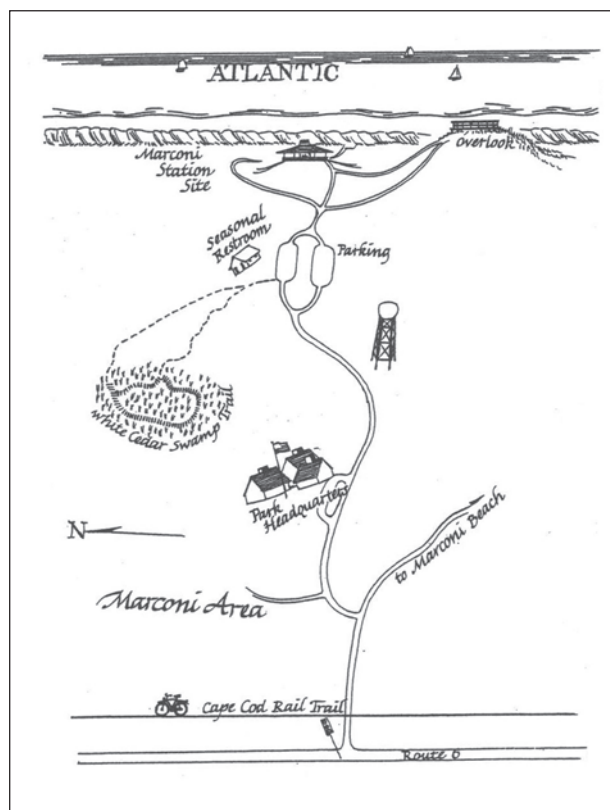
Other: Restrooms are available seasonally at the Marconi Station Site and Marconi Beach.

Tips: The Marconi Station Site offers a superb viewing area across this portion of the Cape from ocean to bay. The Atlantic White Cedar Swamp Trail also begins here.

Time Frame: Five-minute narration on bus. Fifteen to thirty minutes, if stop is made at either the station site or the beach.

Notes for Educators The overlook at the Marconi Site offers a full ocean to bay view across the Cape. The Marconi Site offers lessons on the history of radio communication, and the Atlantic White Cedar Swamp trail displays a unique cross section of Outer Cape vegetative communities.

Highlights: Marconi Station Site exhibits
Observation platform
Atlantic White Cedar Swamp Trail
Marconi Beach
Park Headquarters Building
Former site of Camp Wellfleet
Whydah (Whydah) pirate ship wreck site



Marconi Station

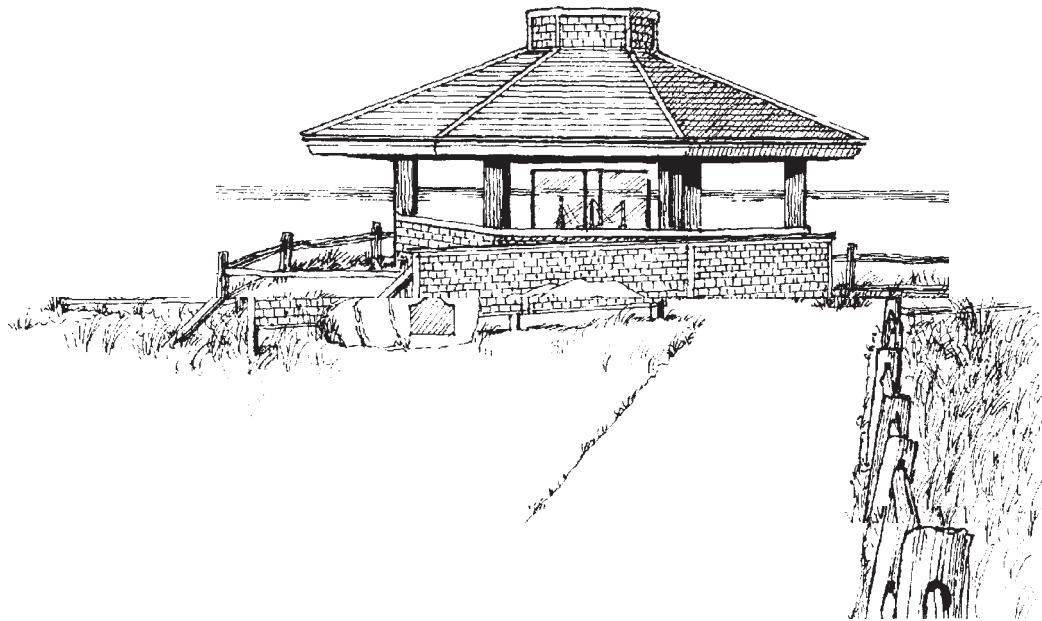
Prominent Natural Features

The cliff rises 85 feet above the beach. The elevated plain at the top slopes gradually toward Cape Cod Bay. This is a good location to observe and discuss the east-to-west flow of glacial outwash.

The Atlantic White Cedar Swamp Trail is a 1.5 mile nature trail that descends gradually in elevation into the swampy environment that hosts Atlantic white cedar and red maple trees. The trail offers an excellent view of different plant communities, starting out with heathlands, then stunted pitch pines and bear oak, taller pitch pines and black and white oaks, and finally the white cedar-red maple community.

An **observation platform** at the Marconi Station site offers an excellent overview of the Outer Cape, including both ocean and bay.

The **Marconi site uplands** are a landscape slowly recovering from European land-use practices, which stripped the landscape of topsoil, and then further from the effects of Camp Wellfleet, which further impoverished the vegetative cover during World War II. The landscape today, however, serves as an important upland heath community, which harbors several rare species, including broom crowberry and two types of poverty grass.



Marconi Station

Touring Script

The Marconi Area obtained its name from the famous Italian inventor, Marconi. From a site here, Marconi successfully completed the first transatlantic wireless communication between the U.S. and England in 1903.

Here, the outer beach is famous for the steep, forty-foot sand cliff (or scarp) located behind it. Swimmers and beach walkers feel a sense of solitude here because the scarp and ocean provide an unbroken, pristine natural scene in all directions.

The uplands above the beach slope gradually westward, and provide a graceful vista of both the bay and sea horizons of this portion of the Cape.

A platform above the Marconi station site enhances this view, and offers vistas southward to Eastham, and northward to Truro.

The Marconi operation at this location was initiated by the young inventor in 1901. However, in December of that year, due to a number of setbacks, he had to use temporary facilities on St. John's, Newfoundland to prove his theory - wireless could cross the Atlantic! Meanwhile, a new station was built in Nova Scotia while repairs were being made to the Wellfleet station, and the first two-way, transatlantic wireless message was made at Glace Bay, Nova Scotia, on December 17, 1902. Not long after, the Wellfleet Station was ready, and on January 18, 1903, Marconi staged another world's first (and a bit of a media event) by successfully transmitting messages between the president of the United States and the king of England. With rapid advances in technology, the station became outdated in a matter of a few years, and was replaced by a newer station in Chatham, Massachusetts.

Marconi chose this site because of the barrenness of this elevated table land overlooking the ocean. The government chose the area for similar reasons during World War II, and established Camp Wellfleet at this site to serve as an artillery training facility. The military camp eventually outlived its need, and the property was transferred to the National Park Service with the creation of Cape Cod National Seashore. The Park's administrative headquarters located here in 1965.

The Atlantic White Cedar Swamp Trail, which was given an award by James Watt, Secretary of the U.S. Department of Interior, is located here, providing a cross-section look at much of the Cape's upland vegetative communities.

The bluff overlooks the vast Atlantic and the drama of sand and surf. Dubbed the "graveyard of the North Atlantic," the off-shore sand bars here doomed many ships, including the pirate ship Whydah (or Whydah), wrecked in 1717, and the Castagna, which wrecked while the Marconi Wireless Station was in operation.

Marconi Station

Marconi Station Area - South Wellfleet

Marconi Station

Guglielmo Marconi searched the east coast of the United States and Canada for sites suitable for proving his theory that radio waves could be transmitted long distances beyond the line-of-sight. Marconi settled on two sites—one at St. John's, Newfoundland, and the other here at South Wellfleet. The St. John's station sent the first readable message on December 16, 1902, to Poldhu, England. Four weeks later, January 18, 1903, the first transatlantic wireless message was sent from the United States to Europe.

Two famous shipwrecks occurred near this site. On April 26, 1717, the 300-ton galley *Whydah*, commanded by the notorious pirate Samuel Bellamy, drove ashore and went to pieces. All but two of the crew of 146 were drowned. The *Whydah* has been the object of much activity on the part of treasure seekers, as she was reputed to be carrying 20,000£ in English Gold.

Directly below the towers at the Marconi station, the Italian bark *Castagna* came ashore during a bitter winter gale on February 17, 1914. Because of the intensity of the gale, no one was aware of the disaster until the following morning. The crew, fearing that the ship would soon break up, took to the rigging. Several of the crew were found frozen there. The rescuers brought the survivors to the Marconi station where they were cared for until they recovered from the ordeal. The *Castagna* was the last square-rigged vessel to be wrecked on the shores of Cape Cod.

Blackfish Creek

Various drainages intersect the Outer Cape, generally running in an east to west direction. These drainages are the result of water coursing off the ice front and over outwash materials that abutted the massive glaciers located here some 18,000 years ago.

When the glaciers melted and sea level rose, these drainages became estuarine at their western terminus. Blackfish Creek is one such notable feature in Wellfleet. This drainage connects with a broad salt marsh environment at its western end, which is visible from Route 6.

This shallow meandering portion of Blackfish Creek became noteworthy because of its configuration, particularly in association with mass strandings of pilot whales, or blackfish (hence its name).

For reasons still not fully understood by scientists, whales and dolphins frequently strand on Cape Cod bayside shores. The possibility is that sickly individuals lead other members of the pod ashore. Another theory is that these marine mammals, which navigate by echolocation, become confused by the meandering configuration of such drainages, and get caught by rapidly falling tides. Thousands of pilot whales have stranded in the vicinity over the years. Noted author, Henry David Thoreau, wrote about one such stranding

Fresh Brook Village

Another drainage, just off the highway in the woods to the east, harbored an early settlement known as Fresh Brook Village. It stood astride a road known by the settlers as the Old Kings Highway.

Settled about 1730 by people from Eastham, the village was occupied by perhaps a dozen families at its peak. It was a quiet place where fishermen came home from their labors in small boats in the Bay. The houses were small and usually included enough land for a small garden plot. There was a store and Aunt Lydia Taylor's tavern where travelers using the stage along the Kings Highway might stop for refreshment. Children attended a one-room school nearby.

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Marconi Station Area - South Wellfleet continued

By 1872, the Cape Cod Railroad was extended toward Provincetown, and Fresh Brook was crossed by a culvert that restricted the size of the passage under the tracks. Not long afterward, fishermen began to use power boats and people moved away from the village. By 1900, only two families remained at Fresh Brook. The last resident, Asa Cole, died in 1905.

About this time, a Boston sport-fisherman purchased 85 acres and created a fishing camp for himself and his friends. Fresh Brook was stocked with trout, and for the next twenty years or so, he and his friends enjoyed this peaceful area. Today, the old village lies in the woods and shows few signs of its long human occupation. All that remains of the early settlers' homesites are depressions marking their cellar holes. The Old Kings Highway is a narrow dirt road used for fire patrol by Park Rangers. The lesser roads are paths through the woods or have disappeared in the forests. Hikers who are quiet enough sometimes see small game, including fox, and, once in a while, a coyote.

Most of the early inhabitants are buried in the cemetery of the old South Wellfleet Congregational Church, just north of the village. The graves are marked, and one, that of John Taylor, Aunt Lydia's husband, usually has a tiny flag and is marked by an inscription that lists him as one of General Washington's honor guard during the Revolution.

Camp Wellfleet

Just before World War II, the Army took possession of the land from the Eastham-Wellfleet boundary from Route 6 to the Atlantic. Barracks, mess halls and other buildings were erected to serve the thousands of troops who were stationed here during and after the war, primarily for anti-aircraft artillery training. Today, former soldiers from Camp Wellfleet occasionally visit their old training ground. There are few visible signs of it today-the water tower off the road to the Marconi site, a few fire hydrants in the open fields that were used for the tents and barracks, a pump house south of Park headquarters, and a few of the old roads are all that remain.

After the creation of Cape Cod National Seashore in 1961, title to this area was transferred from the Army to the National Park Service.

Marconi Station

Marconi

Birth of an Idea

The experiments of Heinrich Hertz inspired the idea. This German physicist first demonstrated the existence of electric and magnetic waves, and with this revelation young Guglielmo Marconi began dreaming of a way to send messages from transmitter to receiver without the aid of wires.

In 1894, Marconi retreated to a top floor laboratory of his family's Villa Grifone near Bologna, Italy, and at the age of twenty, began his experiments in earnest. At first, Marconi used homemade equipment, testing and repeatedly modifying it, each time stretching to greater limits the distances that signals could be received from a transmitter. That first winter, it was thirty feet. In 1895, it was one mile. Then, using more powerful equipment, it was ten, then twenty, then fifty miles. And, by 1901, a two hundred-mile range was achieved. Wireless telegraphy was suddenly the rage of Europe-and then of America.

Spanning the Ocean

For Marconi, the "great thing" was to transmit wireless signals across the Atlantic. So to accomplish this, stations were built at Poldhu, England, and South Wellfleet, Massachusetts. Huge rings of masts were installed to support the needed antennas, but these were destroyed by storms.

As an interim step, Marconi used a kite aerial at Glace Bay, Nova Scotia, to detect transmissions-from Europe. On December 1, 1901, he succeeded in hearing the letter "s"-the first transatlantic reception.

Then he and his crew worked furiously to reestablish the damaged towers in Poldhu and South Wellfleet. The new antennas consisted of sets of four wooden towers, each 210 feet high. Within each powerhouse, two kerosene-burning engines produced 2,200 volts of power. When fed to a Tesla transformer, the power was stepped up to 25,000 volts-the energy needed to transmit long-wave signals so far. To improve his operation, a new station was constructed at the same time in St. Johns, Newfoundland. Here, a successful two-way exchange of messages was made on December 17, 1902.

On January 18, 1903, the first United States attempt was made. Messages were broadcast in international Morse code, and with elation, the official communiques of President Theodore Roosevelt and King Edward VII were successfully exchanged by the two stations. It was the first two-way wireless communication between Europe and the United States.

The Years of Operation

Within months, the South Wellfleet station was regularly sending American news through Poldhu to *The London Times*. And, in return, a telegraph line connected Cape Cod's wireless stations with the South Wellfleet telegraph office, which relayed European messages to *The New York Times*.

Oceangoing vessels quickly adopted Marconi apparatus to receive news broadcasts, and soon, the ship-to-shore transmittals were a major operation; business and social messages could be sent for fifty cents a word. The station's effectiveness was limited, however, so broadcasts were made between 10 p.m. and 2 a.m. when atmospheric conditions were best. This brought little enthusiasm from local residents, for the great three-foot rotor, supplied with 30,000 watts of power, produced a crashing spark heard four miles downwind.

Novel objects have a way of becoming routine, and so it was with wireless telegraphy. The romance of communication with ships at sea remained high, however, and rose higher with repeated sea rescues. Interest reached a dramatic level with the *Carpathia's* wireless-aided rescue of over seven hundred people from the *Titanic* in 1912.

Marconi Station

Marconi continued

Demise

For fifteen years, the South Wellfleet spark-gap transmitter continued in commercial use, primarily for ship-to-shore transmissions. Skilled telegraphers sent out messages at the rate of seventeen words a minute, and station CC served in effect as the first “Voice of America.” But, its end was inevitable. The sea cliff of South Wellfleet was eroding three feet each year, and by 1916, the easternmost towers were threatened with collapse. The station was closed the following year by the Navy to ensure security and news censorship during World War I, and all the while, successive inventions were making spark-gap transmission obsolete.

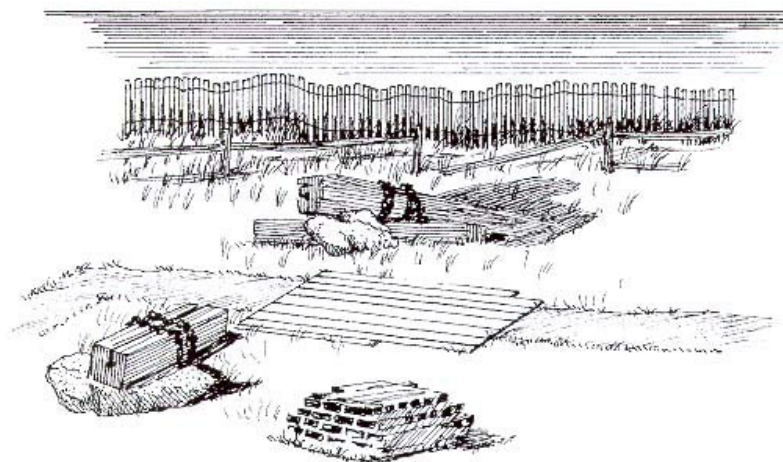
The station never reopened, and in 1920, it was scrapped. The barn-red towers were dismantled, useful equipment was salvaged, and the buildings, once filled with the excitement and familiar sounds of wireless communications, were abandoned.

WCC in Chatham replaced old CC, and remained one of the most heavily used ship-to-shore radio stations on the east coast.

A Changed World

It was an era of new achievements and new horizons. Communication by wireless was a part of this, for it affected the way the world was viewed and how societies worked. It heightened interest in events beyond the bounds of daily contact. It affected national unity. It raised new possibilities of what could be accomplished. It brought new efficiency to business - and to warfare.

Marconi’s impact was great. And, when he died, a final respect was paid as all wireless around the world were silenced in his honor. No other person had ever received such recognition. No others have received it since.



Marconi Station

The Marconi Station

South Wellfleet, Massachusetts 1901-1920

In November 1901, the original Marconi Wireless Station, South Wellfleet, Massachusetts, was nearly complete. Before a single signal could be sent, a storm in that month destroyed the original masts, a circular arrangement of twenty single poles, 200 feet high. The powerhouse, connecting corridor and transmitter house were undamaged, however, and, in 1902, Marconi instructed his engineers to erect four 200-foot high wooden towers around the buildings which occupied the center of a square measuring 200 feet on a side.

On January 18, 1903, with Marconi himself reputedly operating the key, the first transatlantic wireless message from the United States was sent and received, a message from President Theodore Roosevelt to the King of England. (This was one month later than the first North American message, which was sent and received in Europe from Glace Bay, Nova Scotia in December 1902.)

The Marconi spark-gap transmitter operated successfully until 1917, when three unrelated factors resulted in the dismantling of the equipment about 1920:

1. Censorship imposed by World War I.
2. The erosion of the sea bank, endangering the two outermost towers.
3. The American Dr. Lee DeForest's invention of the vacuum tube, which made spark-gap transmission obsolete.

In 1920-21, the towers were cut down and the machinery scrapped. All that is left today are remains of the transmitter house base, part of the corridor which connected the transmitter house with the powerhouse, and the two western tower bases. The eastern ones are now on the beach forty feet below, where they are sometimes visible. As early as 1906, Marconi's engineers stated that the eastern towers had been placed too close to the ocean.

There is no trace of the frame house or "station quarters," where the manager, two engineers, and three operators lived. A direct-line telegraph connected this building with the South Wellfleet telegraph office in the railroad station. News from *The New York Times* was punched out on tape (Continental Code) and transmitted from Marconi's station from 10:00 p.m. to 2:00 a.m. These messages could be picked up by any ship equipped with Marconi apparatus. Private messages could be sent for fifty cents a word.

The South Wellfleet station operated in a limited way under Navy control from 1917 to 1920, when the station was finally abandoned.

Marconi Station

Atlantic White Cedar Swamp Trail

Life is harsh at the edge of the sea. The soil is nothing more than windblown sand, with little ability to hold water. There are few nutrients in the granitic soil. The winter gales prune any plant exposed more than others. Salt spray whipped out of the surf will inhibit or kill all but the most tolerant plants.

But, further inland, these conditions soften. The dehydrating effects of salt spray lessen; a downwind slope provides shelter from the pruning effects of salt spray and wind; and toward the cedar swamp, there is a change to a richer soil, able to hold more water.

One condition grades into another. And, likewise, there is a transition of plants best suited to the requirements of each place along the way.

Life Behind the Dunes

A low-growing community of bear oak, golden beach heather and broom crowberry survives behind the dunes. Stunted pitch pine grow here, too, but they are progressively taller as the trail descends (both stunted and tall trees are about 75 years of age).

The pines are still taller where there is more moisture; and beneath them, thrive young black and white oak in place of bear oak. Larger, older oaks grow nearer the swamp, and below them, there appears a new ground cover checkerberry, wild sarsaparilla and mayflower, which grow in the acidic soil produced by decaying oak leaves. Red maples prosper in the wettest soil close to the swamp, accompanied by still another array of understory plants- sweet pepperbush, inkberry, and sheep laurel.

Changes are also a product of time, for nothing in nature is constant. All of this land was barren in the 1850's-a result of years of overuse. And, it was only in the last century as the land was abandoned-that it began to recover.

Pines tower above young oaks, and they grow among the larger oaks today, but their demise is certain. Pine seedlings cannot grow in the deep shade of summer, and so as the older pines age and die, they will not be replaced by their own kind.

In the short run, an oak forest will emerge to cover more and more land. In the middle run, a beech forest may appear. And, in the long run, all of it will succumb to the advancing sea.

The Cedar Swamp

When the last glacier retreated, only a dry, shallow depression here in the barren debris marked where a block of ice once lay. There were no ponds, because glaciers still locked up much of the world's water-and the Ice Age sea stood four hundred feet lower than today. But, as the ocean rose, the freshwater table of land was lifted. And so, at last, fresh water intersected this "kettle" about seven thousand years ago.

Plants of both land and water added their debris to the depression. Today, this layer of peat is 24 feet thick.

Northern plants were the first to appear after the glacier's retreat. But, as the climate warmed repeatedly over the centuries, southern plants entered the landscape. Perhaps five thousand years ago or so, Atlantic white cedar began to grow on Cape Cod wherever there was wet ground or a swamp.

Marconi Station

Atlantic White Cedar Swamp Trail continued

Of course, the forested swamps were quickly cleared once European colonists arrived in this new world.

Settlers dreamed of such a wood. It was light, it resisted decay, and it was easy to shape. And so its products quickly found their way into every avenue of colonial life. The lumber was split into boards for houses and farm buildings. It was used for joists and frames, for doors and rafters and floors (because it scoured so white), and tanks to hold whale oil. Its posts fenced fields, its poles supported garden vegetables and flowers, and its slats became laths and boxes and woodenware. Organ pipes and water pipes were Atlantic white cedar-and during the Revolution, even gunpowder was produced from its charcoal.

At first, white cedars three to four feet thick had been logged from swamps like this one. Later, the succeeding generations of smaller trees were cut. Almost no trees survived from the original forest.

It is the nature of the Atlantic white cedar to invade swamps. Fires, storms, or logging may repeatedly level such a forest, but this tree will return again and again. Indeed, without catastrophes to repeat the process of invasion, red maple and tupelo will, in turn, become invaders. The red maple invasion has already begun, but it is a gradual thing. The seedlings of Atlantic white cedar, like pitch pine, will eventually fail to grow in the deep shade. Still, only if there are several centuries without disturbance (a rare thing in nature) will there be a complete change.